



Faculty of Computing, Engineering & Media  
School of Engineering

# Foundation Degree in Forensic Road Collision Investigation

Incorporating:  
UCPD in FRCI (Level 4)  
CertHE in FRCI (Level 4)  
FdSc in FRCI (Level 5)

**Student Handbook 2019/20**

*A De Montfort University programme delivered by AiTS*

## **Welcome**

We would like to take this opportunity to welcome you to De Montfort University, and more specifically, to the Faculty of Technology. De Montfort University is one of the leading modern universities in the areas of computing, engineering, and media technologies. The Faculty of Technology hosts one of the largest centres of advanced technology in any European University, attracting student applications from around the world. We also have a strong record of working with staff from AiTS on Forensic Road Collision Investigation (FRCI).

The staff at De Montfort University, some of whom are also AiTS staff, are committed to providing the best possible teaching and support for our students, as demonstrated by the National Students Survey (NSS) results from recent years. One of the keys to our success is strength in research, which keeps our teaching up to date and gives you an opportunity to participate in leading-edge developments.

The Faculty has strong links with industry. Several of our courses have links with major employers, such as the BBC and Orange. Our professional focus is exemplified by the placement opportunities that are available on all our undergraduate BSc and BEng courses and all our postgraduate MSc courses. Through the professional focus of our courses, the graduate employment rate from this Faculty is among the best in the sector. Our graduates gain employment in a wide variety of roles, such as engineers, technologists, computer scientists and forensic road collision investigators.

There has been a liaison for many years between AiTS and De Montfort University with the University Certificate in Professional Development in FRCI, which has now developed into the Foundation Degree in FRCI. Both of these courses open up opportunities for those wishing to develop a career in collision investigation working for the police, transport companies, engineering consultancy organisations, insurance companies, individual private consultancies and similar organisations. The UCPD in FRCI has operated successfully thorough out the world, with students from many countries including U.K., Eire, Belgium, Australia, New Zealand, Germany, Malta and Cyprus.

We hope that you enjoy your study on this course and we wish you every success.

### **A welcome note from the Deputy Vice-Chancellor**

Thank you for choosing to study at one of our partners on a De Montfort University validated programme. I would like to take this opportunity to welcome you and tell you something about what we hope to offer you during your time with us.

De Montfort University has been working with a range of partners, from Further Education Colleges to private providers, to offer students an alternative route through Higher Education for a number of years. We are very proud of our relationship with our partners and consider each individual student to be integral to the partner and the broader DMU community.

We offer all students studying at a partner the same experience as a student studying at DMU on our campus. If you choose to visit De Montfort University you'll have access to our renowned Queen Elizabeth II Diamond Jubilee Leisure Centre and the Kimberlin Library. If you choose not to visit De Montfort University you'll still be able to access our range of online support. Whatever your path I am sure you will enjoy being a part of our vibrant, distinctive, international community!

I wish you every success and happiness during your studies.

With best wishes

A handwritten signature in blue ink that reads "Andrew Collop". The signature is written in a cursive, flowing style.

Professor Andy Collop  
Deputy Vice-Chancellor

## **Programme Team and Contact Information**

The Foundation Degree in Forensic Road Collision investigation is a De Montfort University Programme delivered by staff from AiTS.

Staff at AiTS have prime responsibility for the delivery of the Programme and issuing of learning materials.

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Faculty of Technology, De Montfort University, The Gateway, Leicester, UK LE1 9BH

Mr Haris Pancholi (Programme Manager) – Tel +44 (0)116 257 7059, or email [haris@dmu.ac.uk](mailto:haris@dmu.ac.uk)

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## **General Information**

### **1.1 Introduction**

Welcome to the Programme and enjoy your study!

Before you begin your study we would like to tell you a little more about the Programme, how you can prepare for it, and why we believe collision investigation is important.

### **1.2 Forensic Collision Reconstruction**

The word forensic simply means 'of the courts of law' and collision investigation in the context of this Programme means an investigation to reconstruct the events and circumstances of a road collision. Forensic collision investigation is then, the investigation of collisions for the benefit of the judicial system. It does not matter whether you are acting for the prosecution, defence, plaintiff or defendant; ultimately you are acting for the court itself. You should strive to present the facts of the case in a logical and easy to follow sequence, considering all relevant facts.

Of course there will be disagreement about the interpretation of various facts in a particular case. The very nature of the British and many other judicial systems is adversarial and you will often find yourself opposing someone whose interpretation differs greatly from your own. What should not happen is that you disagree about the facts themselves. If a vehicle skids for 20 metres into a collision, there should be no dispute about this. Similarly, as you will see, if the coefficient of friction is found to be a certain value, there should then be no disagreement about the initial speed of the vehicle.

The Programme Team hope, that through your study, you will develop an ability not only to reconstruct road traffic collisions, but also to consider the alternative viewpoint. If, while working for a client, you discover facts that lead you to conclude they appear to bear some responsibility, this must be included in your report.

### **1.3 Programme Aims**

The programme is designed for those who wish to develop or enhance their professional skills relevant to road vehicle collision investigation. This includes serving police officers, insurance investigators and those who offer consultancy expertise in this area. The course aims to help you to understand how modern technology is used in forensic collision investigation. It aims to teach both the underlying principles and theory and also the implementation of the technology. The material covers a wide range of hardware and software such as accelerometers and bespoke software for analysis of damage to vehicles.

Our aim in designing this Programme is to train investigators to a standard level of competence throughout the industry, each applying the same laws of physics. There really is no dispute about the physical laws we apply to collisions. It should not be necessary to prove them to the satisfaction of some other expert whose only goal is to exonerate their client by clouding the issue.

At the end of the Programme you will have all the basic skills necessary to reconstruct the majority of collisions, prepare a written report and present that report verbally. True expertise in this subject needs practical experience as well as knowledge. We cannot give you that experience. That can only be gained by you applying the knowledge to real collisions. Mistakes will undoubtedly be made, but this is part of the developmental process.

This Programme only covers one facet of collision investigation, the reconstruction of

collisions. There are other areas which can also be studied. These include road engineering and vehicle examination which you may wish to study at some future date.

#### **1.4 Programme Rationale**

Staff from AiTS have delivered a successful University Certificate in Professional Development (UCPD) in Forensic Road Collision Investigation (FRCI) since 1997. There is a demand within the industry for a more substantial professional qualification in collision investigation. AiTS already offer a variety of other courses and have significant expertise in the area. The FdSc aggregates these courses, suitably modified for higher education, and adds one or two more broadly based modules. The BSc (Hons) Professional Studies (Forensic Road Collision Investigation) is a 'one year' top up for the FdSc and follows on from this programme.

For many years now the police service has had specialist collision investigation units. On behalf of these units the Forensic Science Service developed a City and Guilds course for police collision investigators. De Montfort University (DMU) and AiTS developed the UCPD for collision investigators which was open both to police officers and also to civilian investigators. The UCPD has been very successful and meanwhile AiTS have developed other collision investigation courses for the market. Developments in the police service and the expert witness field have led to an increasing demand for a higher level qualification for collision investigators such as this foundation degree. There is also a demand among existing collision investigators for professional up skilling *via* a foundation degree.

#### **1.5 Being a De Montfort University Student**

As awards are made by De Montfort University, you will be registered as a De Montfort University student for the duration of your studies. You will be sent a De Montfort University Student Card and this will entitle you to access to the university's facilities, including library and computing facilities. You will be sent details of these facilities and how to access them. Induction sessions are also available which provide information about using the library effectively as well as accessing the AiTS Virtual Learning Environment, Blackboard and your Single Sign On account.

Your programme is based in the Department of Engineering which is part of the Faculty of Technology.

You can access information about DMU and the Faculty of Technology via the DMU and Faculty web sites - <http://www.dmu.ac.uk/about-dmu/about-dmu.aspx>

As a student enrolled on a De Montfort University validated programme, AiTS will apply the University's General Regulations and Procedures Affecting Students, as these regulations apply to all De Montfort University students, regardless of their location of study. AiTS has a copy of the Regulations but you can also find them at: <http://www.dmu.ac.uk/dmu-students/the-student-gateway/academic-support-office/student-regulations.aspx>

This programme/module handbook has been produced to provide students with specific programme/module information and guidance. More general advice about the range of support and resources students can access from the University are available via the DMU @ Your Local College section of the DMU website (<http://www.dmu.ac.uk/dmu-students/student-resources/local-college-learners/local-college-learners.aspx>) including a range of study support materials and progression information.

Starting with a blank sheet of paper, a group of students and staff set out the type of things they thought that they and the university should commit to. From teaching and learning, to

support and university life, these ideas were refined into a single document. To see the commitments from the university to students, from students to the university, and from the Students' Union to students look to the Student Charter, available at <https://www.dmu.ac.uk/current-students/student-resources/student-charter.aspx>

## **1.6 Personal tutor scheme**

DMU provides all of its undergraduate students with a personal tutor who can be contacted regarding any general academic matter or personal concerns relating to life at DMU. The initial role of the tutor, along with the Student Advice Centre, is to help students make a smooth transition to university life.

New students have the opportunity to meet with their personal tutor during the first three weeks of study, either individually or within a group, and begin to develop a positive relationship with them.

Each personal tutor will:

1. Provide reliable and consistent advice and guidance
2. Provide regular opportunities for feedback on general academic progress and action-planning for students in relation to their academic progress
3. Meet with first year students within three weeks of the start of their studies and monitor their attendance so the faculty can encourage participation
4. Be proactive in arranging meetings with students
5. Support personal development planning by promoting reflective learning and ensuring students can review their own progress against action plans
6. Make systematic use of information about students' overall progress, including utilising attendance records and academic performance profiles
7. Explain the options available regarding progression, as appropriate, including general advice on module choice
8. Know when it is appropriate to refer the student to another individual or service for specialist support or guidance
9. Advise students on the importance of career planning
10. Operate the faculty system and keep records in accordance with published faculty protocols
11. Advise the programme leader of any programme-related issues highlighted in tutorials, having regard for confidentiality in relation to individual tutees

## **1.7 Institute of Traffic Accident Investigators**

The Institute of Traffic Accident Investigators (ITAI) is a professional body for those involved in Forensic Road Collision Investigation. You are encouraged to consider joining – see [www.itai.org](http://www.itai.org) for details.

## 1.8 AiTS Student Charter

Our commitment to you  
As AiTS we will aim to...

### Teaching and learning

- Deliver teaching informed by world-class research
- Use appropriate technology to support you
- Offer varied assessment, giving you timely and constructive individual feedback

### Support

- Provide you with a Personal Tutor
- Provide academic, professional and personal support when you need it
- Develop your confidence and independence, helping you fulfil your potential

### University life

- Provide high quality resources and equipment for learning
- Provide a safe, secure

and well-maintained learning environment

- Commit to environmental sustainability
- Offer areas for you to study alone and in groups.

### Awareness

- Communicate with you clearly, effectively and in good time
- Consult and listen to your views, and act on your feedback

### Dignity and respect

- Ensure we respect and celebrate cultural and international diversity in all our services
- Deliver services accessibly and inclusively
- Provide equality of opportunity for all of our staff and students
- Treat students and staff with dignity and respect, both in person and online

Your commitment to us  
As a student we expect you to...

### Teaching and learning

- Prepare in advance and plan your workload
- Complete all your work to deadlines and learn from assessment and feedback
- Share and discuss your ideas, participating in your learning and attending timetabled sessions

### Support

- Engage with Personal Tutor
- In partnership with your tutors, take responsibility for developing your skills
- Recognise and develop your employability
- Keep us informed of any changes in your personal situation

### Dignity and respect

- Develop professional standards of behaviour
- Treat other students and staff with dignity and respect, both in person and online
- Respect yourself, the learning environment and the wider community



## 2. Programme Structure

### 2.1 Introduction and Entry Requirements

The Programme builds on the very successful University Continuing Professional Development Certificate at Level 4 in Forensic Road Collision Investigation (UCPD in FRCI at Level 4). In the first year you must take the 2 modules Collision Fundamentals and Collision Case Studies which make up this UCPD. These 2 modules form a strong base for the rest of the course.

The UCPD in FRCI Level 4 has an open access policy with no formal prerequisite qualifications. Success in this UCPD allows you to register for further awards. The material contained in the Statistics for Collision Investigators module is also covered in the Collision Fundamentals module. If you have a City & Guilds Certificate in Forensic Investigation, or equivalent, and are admitted with advanced standing then you must study the Statistics for Collision Investigation module. If you have experience in the police service, then you need not study the Expert Witness module although you may choose to do so.

The awards are designed so that each successive 60 credits of study can bring an additional award leading to the Foundation Degree in Forensic Road Collision Investigation. It is possible to register directly for the FdSc, but doing so means that you cannot gain the intermediate awards. As such it is recommended that you register for each award each year. The awards are cumulative, each building on the previous award and are listed below:

UCPD in FRCI at Level 4

60 credits made up from Collision Fundamentals and Collision Case Studies

Certificate of Higher Education (CertHE in FRCI)

A further 60 credits from the choice of level 4 modules to form a total of 120 credits at level 4

Foundation Degree (FdSc)

A total of 120 level 4 credits and 120 level 5 credits.

The modules are listed below and it is anticipated that you will generally study 60 credits a year. Please note that not all option modules will be offered every year. The list of modules offered in any particular year will depend upon student demand and other factors and are published on the AiTS website <http://www.aitisuk.com>.

The level 4 Collision Investigation Technologies module is compulsory for the FdSc and covers the basic technologies used in collision investigation. These include forensic mapping techniques and crash damage analysis.

The level 5 Further Maths and Computation and Collision Analysis modules are also compulsory for the FdSc and are designed to broaden and deepen your mathematical vocabulary. The Further Maths module covers a range of advanced topics relevant to collision investigation and has a unifying and underlining role for level 5 of the Foundation Degree. It significantly extends your mathematical knowledge and provides an underpinning framework for the other modules. The Computation and Collision Analysis is based around a modern software package such as Mathcad. You learn to perform numerical and symbolic computations. These computations also form a unifying and underlining role for level 5 of the Foundation Degree and for more advanced studies. Further information can be found in the module templates in the appendix to this handbook.

#### Level 4 Modules

Module Code	Module Title	Credit Value	Must Take
ENGS1003	Collision Fundamentals	45	✓
ENGS1002	Collision Case Studies	15	✓

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ENGS1005	Statistics for Collision Investigators	15	✓ (for direct entrants) C&G
ENGS1012	Accelerometers in Collision Investigation	15	
ENGS1015	Collision Investigation Technologies a. Applied Maths for Collision Investigation b. CCTV Analysis c. Damage Analysis	30	✓
ENGS1016	Driver and the Environment a. Driver Response Time b. Wet and Contaminated Roads	15	

## Level 5 Modules

Module Code	Module Title	Credit Value	Must Take
ENGS2001	Further Maths for Collision Investigation	30	✓
ENGS2002	Computation and Collision Analysis	15	✓
ENGS2003	Pedestrian and Pedal Cycle Collisions	15	
ENGS2004	Advanced Damage Analysis	15	
ENGS2006	Advanced Forensic Mapping and Animation	15	
ENGS2007	Motorcycle Collisions & Dynamics	15	
ENGS2015	Analysis of Digital Data	15	
ENGS2016	Vehicle Dynamics & Tyre Technology	15	

All modules are delivered by associate lecturers of DMU who will in general be staff from AiTS. There may also be some input from other companies such as Bond Solon depending on your choice of modules.

A typical study pattern for the Foundation Degree is as follows.

### Year 1 – Award UCPD in FRCI at Level 4

ENGS1003	Collision Fundamentals
ENGS1002	Collision Case Studies

### Year 2 – Award CertHE

ENGS1015	Collision Investigation Technologies
ENGS1016	Driver and the Environment
ENGS1012	Accelerometers in Collision Investigation

### Year 3

ENGS2001	Further Maths for Collision Investigation
ENGS2002	Computation and Collision Analysis
ENGS2003	Pedestrian and Pedal Cycle Collisions

### Year 4 – Award FdSc

ENGS2004	Advanced Damage Analysis
ENGS2006	Motorcycle Collisions & Dynamics
ENGS2009	Analysis of Digital Data
ENGS2010	Vehicle Dynamics and Tyre Technology

In years 3 and 4 there are alternative combinations of modules available. Students normally study a total of 60 credits each year.

## 2.2 Award Classification

Some programmes provide the opportunity to achieve an award with a classification of pass, merit, or distinction. This is not available for the UCPD as this is specifically a separate programme to the FdSc. However, the FdSc (and CertHe exit award) provide this opportunity. The requirements are as follows:

### CetHe:

If a student chooses to exit the programme and achieve a CertHe;

A distinction may be awarded if a student has an average of 70% or above across their last 60 credits.

A merit may be awarded if a student has an average of 60% or above across their last 60 credits.

### FdSc:

A distinction may be awarded if a student has an average of 70% or above across their last 120 level 5 credits.

A merit may be awarded if a student has an average of 60% or above across their last 120 level 5 credits.

## 2.3 Module Details

### Level 4 Modules

Module Code	Module Title
ENGS1003	Collision Fundamentals – The module introduces the necessary mathematics and mechanics to analyse the behaviour of skidding vehicles, perform momentum and critical speed analysis, perform projectile calculations and limited visibility calculations and record and analyse the accident scenario. Assessment : Examination 50%, Coursework 50%
ENGS1002	Collision Case Studies – The module covers skills to assess and evaluate available data, apply the analytic techniques to collision investigation and prepare a written report on the conclusion. Assessment : Coursework 100%
ENGS1005	Statistics for Collision Investigators – gives an introduction to the variety of statistical techniques available to collision investigators. Assessment: Coursework 100%
ENGS1012	Accelerometers in Collision Investigation – This module provides students with the theoretical and practical knowledge to operate a variety of accelerometer devices to obtain friction coefficients. Emphasis is placed on practical generation and analysis of data. Assessment : Coursework 100%
ENGS1015	Collision Investigation Technologies – This module provides students with the theoretical and practical understanding of two major technologies used in collision investigation, the calculation of speed change from damage and from video footage. Students also examine the applied maths underpinning collision investigation technologies and develop computer models to investigate simple 'what if' scenarios, typically using a spreadsheet. The maths is designed to extend students' knowledge beyond that provided in introductory level modules and utilises the set book Maths for Science. Typically AiDamage is used to calculate the velocity change. The module also explores video analysis techniques applicable to collision investigation and covers the

	analysis of CCTV footage to glean the necessary information to calculate speeds. Students will also expand their knowledge of mathematics and apply those techniques when designing and constructing spreadsheets. Assessment : 85% coursework 15% phase test
ENGS1016	Driver and Environment – This module provides students with a theoretical and practical understanding of driver response time and the effect of moisture and contaminants on road surfaces. The module covers the important components of driver response time and also the method of calculation of driver response time. The module also provides students with an understanding of how friction on wet and lubricated road surfaces varies when compared to dry roads. The module examines a variety of models and data to determine likely friction coefficients in practical scenarios. Assessment : 100% coursework

## Level 5 Modules

Module Code	Module Title
ENGS2001	Further Maths for Collision Investigation - This module extends and develops students' mathematical ability. Additional mathematical techniques are introduced which are necessary to analyse collision investigation problems beyond those covered during introductory courses. It also provides a sound theoretical basis for the modelling modules and project work. The module is based around a set book, Engineering Mathematics by Croft, Hargreaves, Davidson and Flint and concentrates on the topics that are relevant to collision investigation. Individual topics are introduced in logical and easily understood units with emphasis on applying mathematical techniques to solve practical problems. Assessment : Coursework 100%
ENGS2002	Computation and Collision Analysis – This module broadens and deepens the students mathematical vocabulary. It is based around a modern software package. The students learn to do numerical and symbolic computations. These computations form the basis for a further mathematical and statistical concepts. Typically Mathcad will be used in this module. Assessment : 100% coursework
ENGS2003	Pedestrian and Pedal Cycle Collisions – This module provides students with a theoretical and practical understanding of the modelling of pedestrian and pedal cycle collisions. The module covers the various mathematical models commonly used to determine vehicle speed from the distance a pedestrian or pedal cyclist is projected in a collision. The module also covers the collection of scene data. Assessment : 75% coursework 25% phase test
ENGS2004	Advanced Damage Analysis – Building on the foundations of Damage Analysis provided by ENGS1013 this module provides students with a detailed theoretical understanding of the calculation of speed change from crush damage and momentum – how the CRASH3 and momentum models can be used in tandem to solve a wider range of practical problems. Assessment : 100% coursework
ENGS2007	Motorcycle Collisions and Dynamics- This module provides students with a theoretical and practical understanding of motorcycle handling. The module covers the important components of single track vehicles, rectilinear motion and steady state turning. It also looks at steering theory and how the gyroscopic forces generate righting moments affecting the stability of these vehicles. Learners must be able to ride a

	pedal cycle. Assessment : 60% coursework 40% phase test
ENGS2015	Analysis of Digital Data – This module provides students with the theoretical and practical understanding to analyse and utilise the data from incident data recorders (IDR), journey recorders and digital tachographs in collision reconstruction and forensic route tracing scenarios. Considerable emphasis is placed on the analysis of data from real-world scenarios using suitable software. A variety of software packages are typically used for this module such as Excel, DigitalAnalyst and DTCOScope. Assessment : 100% coursework
ENGS2016	Vehicle Dynamics and Tyre Technology – This module provides students with the theory and construction of pneumatic tyres. Emphasis is placed on discriminating between common modes of wear and damage through visual inspection. Also discussed is the contribution of tyres to the handling and stability of road vehicles. The contribution made by the tyre is extended to encompass suspension effects and vehicle handling generally. A planar model is developed to describe mathematically the behaviour of an idealised vehicle using Pacejka's <i>Magic Tyre Formula</i> and Rill's <i>TMEasy model</i> . Pitch and roll motion are introduced as modifying factors for tyre responses. Vehicle rollover causation and prevention are also discussed. The motion of articulated vehicles is also considered to include trailer swing, jack-knife scenarios and off-tracking. Assessment : 100% coursework

## 2.4 Bibliography

The majority of the teaching material is supplied in the form of blended learning with parts of modules delivered using distance learning materials and some parts of modules delivered by more traditional lectures. The supplied learning material is supported by the additional material indicated below

The following texts are compulsory for particular modules:

ENGS1015 – Collision Investigation Technologies

S. Jordan, S. Ross and P. Murphy, 2002, *Maths for Science*, The Open University, ISBN 978 1 84873 0052

ENGS2001 – Further Maths

A Croft, R Davison, M Hargreaves, J Flint 2013, *Engineering Mathematics: A Foundation for Electronic, Electrical, Communications and Systems Engineers* 4<sup>th</sup> Edition, Prentice Hall, ISBN: 978 0 273 71977 9 (Available as an eBook from the DMU library)

ENGS2016 – Vehicle Dynamics and Tyre Technologies

R Dukkipati et al, 2008, *Road Vehicle Dynamics*, SAE, ISBN 0 7680 1643 7

The following texts are optional and provide useful but *non-essential* supplementary reading:

R M Brach and R M Brach, 2005, *Vehicle Accident Analysis and Reconstruction Methods*, SAE

R Byatt and R Watts, 1980, *Manual of Road Accident Investigation*, Vol 1, Pitman, ISBN 0-273013-25-4.

R Byatt and R Watts, 1980, *Manual of Road Accident Investigation*, Vol 2, Pitman, ISBN 0-273016-00-8.

J Stannard Baker & L B Fricke, 1986, *The Traffic Accident Investigation Manual*, Vol 1, At Scene Investigation and Technical Follow Up, North Western University Traffic Institute, ISBN 0-912642-06-8.

Lynn B Fricke et al, 2010, *Traffic Crash Reconstruction*, North Western University, Center for Public Safety

A Croft and R Davison, *Foundation Maths*, Prentice Hall, ISBN 0-201-17804-4

William Navidi, 2010, *Statistics for Engineers and Scientists*, McGraw Hill ISBN: 9780071222051

KA Stroud, 2007, *Engineering Mathematics 6<sup>th</sup> Edition*, Palgrave Macmillan ISBN: 9781403942463

KA Stroud, 2003, *Further Engineering Mathematics 4<sup>th</sup> Edition*, Palgrave Macmillan, ISBN: 9781403903129

KF Riley, MP Hobson, SJ Bence, 2006, *Mathematical Models for Physics and Engineering*, Cambridge University Press, ISBN: 0 521 86153 5

D Bastow and G Howard, 1993, *Car Suspension and Handling*, John Wiley & Sons, ISBN: 0 7273 0318X

### Journals

IMPACT, Journal of Institute of Traffic Accident Investigators – you will find this an extremely useful information resource for students of Forensic Road Collision Investigation courses.

### **3. Teaching and Learning**

#### **3.1 Preparation for the Programme**

There is very little pre-programme study that can be performed other than to brush up on your mathematical skills. You will find suitable information about a Maths Primer course provided by AiTS – see [www.aitsuk.com](http://www.aitsuk.com).

For the Programme proper you will need a good scientific calculator. Unless otherwise indicated any assessment requires that you may only use non-programmable, silent, battery powered calculators. A scientific calculator that squares numbers, takes square roots and has trigonometric functions (sin, cos and tan) will be adequate. As a word of warning there are a number of calculators available which are difficult to operate. Before the Programme begins make sure you know how your calculator works.

The Programme is delivered by a mixture of blended learning – distance learning, taught items, research and case studies. The method of delivery will vary between modules. You will be given a comprehensive guide, when you register for each module.

A significant proportion of the programme is delivered as online modules using the AiTS Virtual Learning Environment which can be found at <http://vle.aitsuk.com>. You will be given login details when you register for a course which is delivered this way. Some of these modules also offer online tutorials where you have the opportunity to discuss aspects of the module with your tutor. These are presented using a video/audio conferencing system. You will find it extremely helpful if you have a microphone and headset in order to talk with your tutor during these tutorials. You will not normally need a webcam.

#### **3.2 Study Time**

The initial modules, Collision Fundamentals and Collision Case Studies run from January to October each year. These modules are delivered mainly via distance learning with a week full time study during July or August. Other modules have various start times. Some modules are scheduled to be studied on a part time basis, with a certain amount of self study time. Other modules may include work over a more concentrated period.

You will need to be in a position to spend time studying the relevant material throughout your progress on the programme. Even the more concentrated modules with a directly taught element require significant periods of personal study. It is not always easy to study alone and you need to develop a study method that suits you personally. If at any stage you become hopelessly stuck - contact the tutor responsible for the particular module you are studying.

#### **3.3 Studying with DMU**

Your module tutors are responsible for your progress through a particular module. They are also responsible for the marking of assessments. If you have difficulty in understanding any aspect of the coursework, your module tutor should be contacted. Module tutors are selected for their knowledge of the subject matter and for their practical experience. In addition, module tutors often have experience of teaching collision investigation and know where problems are likely to arise.

Although each module will have its own module tutor(s) you will also be given details of a Personal Tutor when you register for your first module of study. Your Personal Tutor is responsible for your overall progress and personal development throughout your programme of study and normally will be the same person throughout your period of study. You should contact your Personal Tutor if you have problems of a more general nature.

When you register for an award contained within this Programme you will also be given details of how to access the University's Blackboard system and the AiTS Virtual Learning Environment (VLE). The VLE facilitates ready communication between you and your tutors as well as providing

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### 3.4 Computer Software

Some modules such as Collision Investigation Technologies, Advanced Damage Analysis, Advanced Forensic Mapping and Computation and Collision Analysis require you to use computer software. Suitable software is available to purchase in student editions and further details of how to purchase these items is provided when you register for such modules. For example AiTS provide a student version of the Collision Suite software at a reduced rate and Adept Scientific can provide a student version of Mathcad, again at a reduced rate.

### 3.5 Assessments

Each module has different methods of assessment related to what you are expected to learn (learning outcomes) on that particular module. This means that you should see a clear relationship between the learning outcomes in your module outline and the assessment task you are being asked to do.

Assessment comes in three main forms:

- **Diagnostic** assessment allows you and your tutors to see your strengths and weaknesses so you can focus your efforts more effectively (e.g. your tutor may ask you to complete a task which you can then 'mark' yourself and see where your strengths and areas for focus lie).
- **Formative** assessment allows your tutors to give you feedback which you can use to improve. You will be given a mark and feedback for this which you can then use to improve your report writing in a later assignment or exam question.
- **Summative** assessment in which your grade or mark counts towards your overall profile and final degree (e.g. an exam at the end of a module).

Most assignment tasks will use two of these forms of assessment. For each assignment, you will normally be provided with a written assignment brief and an oral briefing from the tutor.

Assignment Briefs will vary but may include:

- Aims of the assignment;
- Learning outcomes for the assignment ;
- Timetable and programme of work, including submission deadline;
- Marking criteria, i.e. how your work will be graded;
- References and source material – to help you complete your assignments.

Following the assignment brief carefully helps ensure that you achieve the best mark possible. The **assignment brief** and **marking criteria** are there to help you **gain marks**.

Modules are assessed in many different ways but here are some of the most common methods of assessment:

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- **Coursework assignment** – a written assignment consisting of series of questions designed to assess your knowledge and understanding of the subject matter.
- **Essay** – a written assignment based on a set question (or multiple questions) with a word limit.
- **Report** – a structured assignment using headings and sub-headings used to look at a particular problem or issue and make recommendations within a word limit. This could be an individual piece of work or group work.
- **Exam** – a formal test to assess knowledge within a time limit and silent conditions. Exams can be closed book (i.e. no material is allowed to be taken in) or open book (specific texts are allowed).
- **Phase Test** – a shorter test (usually multi-choice or short answers) which takes place under exam conditions.
- **Practical** – this is usually performed individually to demonstrate your skill at a particular activity. (e.g. skid testing and marks evaluation)
- **Reflection** – a written piece of work where students are asked to reflect on their development and experience and what they have learned from it.
- **Presentation** – this can be in groups or done individually and usually takes place in a classroom using visual aids such as PowerPoint.

### 3.6 Anonymous Marking

Assignment scripts submitted by students will be marked anonymously in line with the DMU coursework marking policy. At the commencement of an assignment period each candidate will be provided with a randomly generated number under which they will submit their work through the VLE (you do not have to do anything to obtain this number). Once marking has been completed the anonymity of students will be revealed with their assigned number reverting to their name so that specific feedback can be provided by the tutor.

Feedback on assessments will be returned via the VLE. Feedback comments will be provided per assessment with marked scripts returned where appropriate. Students are encouraged to read and utilise their feedback to enhance their future performance. Students will be aware of which tutor has provided feedback and so can contact this tutor to discuss their progress. In all cases feedback will be returned within 4 weeks.

### 3.7 Late submission of Assessments

If you have problems completing an assessment by the cut-off date you should contact your module tutor at the earliest opportunity and in any case before the cut-off date. The University has strict rules on the late submission of coursework and the following rules will be applied:

- If you contact your tutor prior to the cut-off date, your tutor may award an extension of up to two weeks. If you do this and submit your assessment by the agreed date, your work will be marked and the appropriate mark awarded. Please note that your tutor will assess whether an extension is appropriate and you may be asked to provide evidence to support your explanation.
- If you miss a cut-off date by up to 14 days without contacting your tutor, your work will be marked, however the highest mark you will be awarded is 40%, a bare pass.

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- If your work is submitted later than 14 days after the cut-off date without informing your tutor or, later than an agreed extension, your work will not be marked and a fail mark will be applied.

For longer extensions, students will need to apply through Faculty Office at De Montfort University. Please contact your module tutor in writing *well before the assessment deadline*. Your module tutor will contact the University via AiTS to arrange for the appropriate paperwork which will guide you through the process. The DMU undergraduate guidelines can be found here: <https://www.dmu.ac.uk/documents/about-dmu-documents/quality-management-and-policy/academic-quality/scheme-regulations/academic-regulations.pdf>

### **3.8 Plagiarism, cheating, collusion, copying work, reuse of your own work and other Academic Offences**

De Montfort University take offences such as plagiarism, copying others' work, fabricating results and cheating in exams very seriously, and they can lead to expulsion from the University. Therefore we make every effort to ensure that students understand how to avoid committing such offences. AiTS and the University reserve the right to test any student's work for plagiarism. This includes the submission of student work to third parties for electronic testing. For this reason assessments are generally required to be submitted using Turnitin. For further information please consult the following web site: <http://www.library.dmu.ac.uk/Support/Guides/index.php?page=496>. Even more information and examples of bad academic practice can be found in section 4 of the DMU general regulations: <https://www.dmu.ac.uk/documents/dmu-students/academic-support-office/8.-chapter-4-18.19.pdf>

### **3.9 Preparation for the Time Constrained Assessments**

In certain modules you may have a time constrained assessment (examination or phase test) and you should allocate as much time as possible to revision during the time leading up to the final assessment. Some time constrained assessments use equation sheets. Make sure you understand the equations on the equation sheet. Some techniques used occur during the reconstruction of virtually every collision, so it is worth committing those methods to memory. A fresh equation sheet will be supplied for the time constrained assessment.

The end of session exercises are a good starting point for any revision programme to help you prepare for the actual examination.

You will receive specimen assessment paper and answers for some modules. The layout and style of the final assessment will follow closely the specimen paper. It is a good idea to time yourself whilst completing the paper to check your speed and time allocation.

It is essential that you spend some time checking your solutions to the specimen answers. The specimen answers give a good guide as to how the assessors will award marks in the final assessment itself.

### **3.10 Time Constrained Assessments**

You must take your De Montfort University photo ID to all exams and other time constrained assessments. Failure to do so may mean that you are barred from the examination room.

You will be informed of the date, time and venue of the time constrained assessments.

Do prepare yourself fully for the assessment. Complete your revision programme allowing a day or so to rest prior to the assessment day itself. Arrive in plenty of time and make sure you have sufficient pens and pencils etc.

Don't Panic. Although easy to say, we all know from experience that nerves can a problem in time

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constrained assessments. Read through the paper carefully, and attempt the first question. If you become hopelessly stuck at some stage, stop and move onto a different question. If you have time at the end you can always return to that question.

Do write clearly. The assessor will find it easier to award marks for solutions which are clear and easy to follow. If the assessor cannot read your writing or follow your argument, marks are unlikely to be awarded for an incorrect solution. With a clear layout, you are more likely to receive marks for the correct method. A clear layout also makes it easier for you to spot any errors when you check the answers at the end of the assessment.

Do check your answers at the end if you have time. Marks can often be picked up just by recalculating the solutions to the problems.

Do plan your time. The format of the assessment is the same as the specimen paper. If only 5% of the total marks are awarded for a particular question, it is not worth allocating 20% of the time available.

Don't forget to hand in all the answer sheets. You cannot receive any credit for work that is not submitted for assessment.

### **3.11 Requirements for the Awards**

It is important to know exactly what you have to do to successfully complete the programme and be eligible for an award. Full details are given in the De Montfort University *Handbook & Regulations for Undergraduate Awards* which is available on the DMU web site at:

<http://www.dmu.ac.uk/about-dmu/quality-management-and-policy/academic-quality/scheme-and-regulations/scheme-regulations-homepage.aspx>

## **4. Communication**

### **4.1 Difficulties**

If, for whatever reason, you find yourself unable to keep up with the work, please contact your module tutor in the first instance and discuss the problem. Most academic problems can be resolved at this stage. If the module tutor is unable to help, do not hesitate to contact your Personal Tutor or the Programme Leader.

Included in the first mailing is a contact sheet containing the module tutor and your Personal Tutor details.

The Programme Leader should be contacted at an early stage if you have any difficulty that cannot be resolved with your tutors.

### **4.2 Contact with AiTS Programme Leader**

The Programme Leader at AiTS is Mr Craig Dawson – Tel +44(0)1285 864650, or email [cdawson@aitsuk.com](mailto:cdawson@aitsuk.com)

Alternatively you can contact Mr Ric Ward – Tel +44(0)1285 864650, or email [rward@aitsuk.com](mailto:rward@aitsuk.com)

### **4.3 Contact with DMU Programme Team**

Normally your tutor(s) or the Programme Leader at AiTS will deal efficiently and effectively with any problems which arise. However if you are not satisfied with their response, please contact a member of the DMU Programme Team.

The current DMU Programme Team point of contact is Mr Haris Pancholi.

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You can contact the DMU Team via:-

- Mr Haris Pancholi - Tel +44 (0)116 257 7059 or email [haris@dmu.ac.uk](mailto:haris@dmu.ac.uk)

#### **4.4 External Examiner**

The external Examiner provides oversight to the programme to ensure academic practices are held to a high standard. The current External Examiner is Mark Crouch. Mr Crouch is a former Collision Investigator for the Metropolitan Police and is currently the Principal Consultant of FCIR LTD.

The most recent External Examiners Report can be found on the VLE.

Note for students: The details provided relating to external examiners appointed to this module/programme are for information only. You must not contact external examiner(s) directly, and particularly with respect to your individual performance in assessments. If you wish to make a complaint or an appeal regarding your assessment you should follow the University's procedures for Academic Appeals, guidance on which is available via the following link: <http://www.dmu.ac.uk/dmu-students/the-student-gateway/academic-support-office/academic-appeals.aspx>

#### **4.5 Student Feedback and Representatives**

The course team are keen to gather students' views about the various modules so that they understand the students' perspective. This enables them to identify good points and improve areas that need some attention. Student views are obtained in a variety of ways; these include informal conversations between staff and students, feedback forms and student representatives. Student representatives are invited to attend the meetings of the boards that manage the Programme where they can raise any concerns which students have. If they are unable to attend, then they can email the Programme Leader with their comments.

The module Collision Investigation Technologies is compulsory at Level 4 while at Level 5 the Further Maths for Collision Investigation module is compulsory. These modules have an intense briefing/teaching face to face session with the students. These sessions will be used to explain how student feedback will be obtained and also to elect a student representative for that year. For other years the most popular module with an initial briefing/teaching session will be used for this purpose.

A series of induction sessions are also planned each year to introduce new students to the staff and facilities provided by De Montfort University and AiTS. The induction sessions also provide information about using the library effectively and accessing Blackboard and your Athens account. It is very important that you attend these sessions. Details of these sessions will be provided when you first register for an award.

The next section includes some paragraphs on what to do if... . However you can ask your representative to raise issues with a module tutor, the Programme Leader or at the Programme Management Board if appropriate. S/he will expect you to have discussed it with the module tutor and/or the Programme Leader yourself before s/he raises the issue on your behalf.

### **5. Student Support**

#### **5.1 Introduction**

The following section includes general information about your time as a student on the FRCI programme. A number of common questions raised by students are covered and guidance on coursework preparation, submission and assessment is given.

#### **5.2 What to do if you ...**

Are Unable to Submit Coursework on Time

The Programme is intensive, and it is important that coursework deadlines are kept. Failure to do

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so compromises your ability to cope with the succeeding work, both in that module and in other modules. Extensions to coursework deadlines will therefore only be given in exceptional circumstances, after discussion with the Programme Team. All requests for deferment of assessment, including extensions to coursework deadlines MUST be accompanied by mitigating circumstances which should include documentary evidence where this is available (e.g. Medical Notes, Police incident number, etc)

### Lose Your Student Registration Card

You will be issued with a registration card following enrolment and you are required to carry this card at all times when/if you visit the University premises. The card also acts as a library borrower's card. If you lose your registration card, please contact the Faculty Office (0116 257 7050), who will inform you of the procedure for obtaining a replacement.

### Change Your Address

Occasionally we need to write to you and sometimes the University and the Information Centre will send official letters to your home address. It is, therefore, important that you inform the University immediately of any changes to your address or telephone number, at home, and in the case of part-time students, additionally, at work. To do this contact the faculty office (0116 257 7050) and also AiTS (01285 864650).

### Are Worried About a Particular Module

If you are generally happy with your progress but are having difficulties with a particular module, you should discuss matters with the lecturer taking that module. If you are unhappy about doing this, or you find that the lecturer concerned is not able to resolve your difficulties, please discuss the matter with your Programme Leader (01285 864650). It is important that such difficulties are raised early so that the appropriate action can take place.

If there is a general feeling within your group that a particular module is not going well, ask your student representative to raise it with the lecturer concerned. If this presents a problem, or if the situation continues to be unsatisfactory, ask your representative to raise it with the Programme Leader (01285 864650). If necessary, it can also be considered at a Management Board, but this should be treated as a last resort.

### Are Worried About the Programme in General

Don't give up! Talk to your Personal Tutor or the Programme Leader (01285 864650) about any difficulties that you are having, but do it at an early stage before they become overwhelming. Students who feel under pressure, for whatever reason, sometimes unconsciously exaggerate the importance of their difficulties within a programme. Often a discussion with your Personal Tutor or the Programme Leader will be sufficient to change the student's perspective and enable him or her to overcome the difficulty. Alternatively, the tutor Programme Leader may be able to suggest a course of action which will help to remedy the situation.

### Have Personal Problems

The performance of students can be heavily influenced by factors in their personal or working lives, often totally unrelated to the programme. It can be extremely beneficial to discuss such difficulties with another person. If you are in this position, please do not wait until the difficulties become insuperable and get in touch with your Personal Tutor or the Programme Leader (01285 864650) to discuss your situation. AiTs and the University is committed to the wellbeing of students and can provide additional guidance and support for you.

### Wish to appeal against an assessment decision

All assessment decisions and any marks you are awarded are regarded as provisional until they are ratified by an Assessment Board. If you wish to appeal against an assessment decision before an Assessment Board you should discuss this in the first instance with the tutor involved. If your tutor is unable to resolve your complaint, then you should contact the Programme Leader. If you wish to appeal against an assessment decision after the results have been ratified by the Assessment Board, then the University has a set procedure which should be followed. Details can be found at:

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<http://www.dmu.ac.uk/dmu-students/the-student-gateway/academic-support-office/academic-appeals.aspx>

Have a complaint

If you are not satisfied with the service you receive from either AiTS or DMU you can complain. In the first instance this should be directed towards the Programme Leader who will attempt to resolve the complaint locally. If the Programme Leader is unable to resolve your complaint, then you may take the complaint to the University Student Appeals and Conduct Officer. Details of this procedure are available at:

<http://www.dmu.ac.uk/dmu-students/the-student-gateway/academic-support-office/student-complaints/student-complaints-procedure.aspx>

The overall aims of the complaint procedure are to:

- Encourage local resolution in as many cases as possible
- Be simple, open and accessible
- Be accountable
- Be non-adversarial
- Be fair to all parties involved and avoid allocating unnecessary blame to individuals
- Lead to prompt resolution
- Lead to service improvement

A successful resolution at any stage of the procedure should:

- Be honest
- Be fair to all parties
- Include an apology and/or other form of recompense if appropriate
- Include corrective and/or preventive action or provide a clear and honest explanation of what has happened and why further action is not appropriate

The overarching policy is that no person (applicant, student, staff or visitor) is discriminated against, either directly or indirectly, on the grounds of their race, colour, ethnic or natural origin or nationality, gender, marital status, age, disability, sexual orientation, religious or political beliefs, disability or offending background. In particular, no person should be discriminated against for making a complaint.

### **5.3 The Library**

The main library web pages can be found on the following URL:

<http://www.library.dmu.ac.uk>

A Forensic Engineering subject guide specifically for AiTS students has been prepared by the DMU library. This provides resources explaining how to use the library, how to research and write good assignments together with information about referencing. The guide can be found at:

<http://libguides.library.dmu.ac.uk/forensicengineering>

There are specific pages aimed at distance learning students and these can be found at:

<http://www.library.dmu.ac.uk/Users/Distance/index.php?page=18> .

On enrolment you will be sent details of your Single Sign On account for the library and other services. This replaces the older Athens account which some students may already have. This will give you access to the electronic journals available from the library. In some modules you will be expected to make use of published articles relating to the modules. You therefore need to become familiar with the different ways of accessing such materials. The induction sessions also provide information about using the library effectively and accessing Blackboard and your Single Sign On account.

The library has an online set of booklets which are particularly helpful for distance learners. They

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are at:

<http://www.library.dmu.ac.uk/Support/Support/index.php?page=523>

They are easy to use, quick guides introducing you to:

### **Communication – verbal, written and reading skills**

- Report writing
- Note making
- Reading strategies
- Essay writing
- Verbal presentations
- Writing (grammar and punctuation)
- Listening skills

### **Improving your learning**

- Time management
- Curriculum vitae
- Careers
- Interviews

### **Working with others**

- Group work

Each guide is divided into a number of related topics and includes a resource sheet listing further reference material.

For example, Report Writing covers:

- What is a report
- Sections of a report
- The contents page
- Resources

### **How should they be used?**

This is really up to you. You can print off a complete guide, or just the pages that you need. They are a useful starting point when, for example, you are starting to write your first report or make your first presentation. They are useful for reference, revision or simply as a reminder. For example, the Writing set is always worth keeping handy if you can never remember the rules for using colons and semi-colons.

## **5.4 Student Services**

Student Services based at Leicester are offered in the areas of Counselling, Welfare, Financial and Careers Advice, IT services, Study Skill & Learning Support, Disability Unit, International Students, the Student Health Service and the Students' Union. Information regarding these services is provided to all students on the student services web site:

<http://www.dmu.ac.uk/dmu-students/the-student-gateway/student-and-academic-services.aspx>

These facilities are available to you. However they will probably necessitate a visit to Leicester. In the first instance you should discuss any problems with the Programme Leader (01285 864650), the Programme Leader (0116 257 70Programme Management59) or the Faculty Office (0116 257 7050).

## **5.5 Computer related Health and Safety**

It is particularly important, as a student on a programme that uses computers quite intensively, that you are aware of the University Health and Safety Policy which is published in the document

*Safety in the Use of Display Screens.* The following summarises the recommendations.

Posture problems, e.g. aching arms, neck, etc., can be avoided by adjusting your screen, keyboard and chair positions so that you are comfortable when using the computer.

Visual problems, e.g. tired, aching eyes, can be avoided by positioning your screen to avoid glare and so that it is at a suitable viewing distance for you.

Fatigue and strain (visual, physical, mental) can be avoided by not using a computer for long periods without a change of activity. During a break it is better to do some other activity than simply rest. It is recommended that the maximum continuous period of use is 90 minutes, which should be followed by a change of activity for at least 15 minutes. You should really have a 5-minute change of activity every 30 minutes or a 10-minute change after 1 hour.

## **5.6 Programme Management**

The programme is maintained through two boards; the Assessment Board and the Programme Management Board (PMB). The Assessment Board meets to discuss and ratify grades from the previous academic session and approve student progression or award conferment. Only after grades have been ratified are they official, therefore any grades issued to students prior to the Assessment Board meeting are provisional grades only. The PMB handles matters such as modifications to the curriculum as well as monitoring student feedback and the quality of the module being delivered. It allows a continual review process to ensure the programme remains valid, current and of as much use as possible to the students studying.

## **5.7 Declaration**

This handbook is correct at the time of writing and may be subject to change. Throughout your studies, to ensure you have the most up to date information, you should always consult the online version of this handbook held on the AiTS VLE and the online University regulations accessible via the DMU website (<http://www.dmu.ac.uk/dmu-students/the-student-gateway/academic-support-office/student-regulations.aspx> and <http://www.dmu.ac.uk/about-dmu/quality-management-and-policy/academic-quality/scheme-and-regulations/scheme-regulations-homepage.aspx>).

## Appendix 1: Referencing in Coursework: A Guide to the Harvard System

Do you want to show your lecturer how well you've understood a topic by integrating all of your sources clearly?

- ✓ Do you want to earn more marks by excelling in the production of University assignments?
- ✓ Do you want to avoid accidental plagiarism?

As you research and write a piece of coursework, you will rely on information ideas and facts of others to support, evidence and illustrate your work. In so doing you must acknowledge these sources by using a system of referencing within your work. Otherwise you will face the risk of a charge of plagiarism (which is defined by the university as the significant use by a student of other people's work and the submission of it as though it were his or her own). The Harvard system is the most popular referencing system used in Business Schools and is explained in this guide.

Referencing is not a chore or burden, it is a way of acknowledging the sources that you have used and demonstrates that your learning skills/personal information management skills are well developed. This is fundamental to almost any piece of work that you undertake at University. Referencing is not simply about reference lists. Referencing is a feature of projects and essays that has **two** components. The first is referencing within the text at the point where you use information from another source, and the second in the reference list/bibliography at the end of your work. The two are interconnected. Without the other each component is of limited value, and therefore each one needs equal attention.

Referencing comprising of four stages (NICE):

**Noting** the details of your sources



**Incorporating** the references in the text as you write



**Compiling** the references list, and



**Ensuring** consistency between your in-text references and the references

Stage 1 – Noting the details of your sources

For each of the resources (books, journals, magazines, newspapers, etc.) that you use for a piece of written coursework, you should make a note of the following:

- 📌 All authors' forename and surnames
- 📌 Year of publication
- 📌 Title of book
- 📌 Publisher
- 📌 Place of publication (this can be found on the first few pages of a book)

The five details above are sufficient for books and reports. For journal, magazine and newspaper articles, you'll also need the following:

- 📌 Title of article
- 📌 Full title of the journal, magazine or newspapers
- 📌 Full date of publication for newspapers and magazine
- 📌 Volume number of the journal (sometimes you'll see this as 'Vol' or 'V')
- 📌 Issue number of the journal (often this number is in brackets)
- 📌 Page numbers on which the article/paper is printed

For electronic resources, also note the following:

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- ✎ Full location (e.g. <http://aviation-safety.net/specials/af4590/timeline.shtml>) – not simply the main page of the website
- ✎ Date and time of your access to the resource
- ✎ The name of the database from which you acquired the resource

(It is advisable to keep an electronic or paper copy of the web-page in case the content is changed or removed.)

### Stage 2 - Incorporating the references in the text as you write

Referencing within the text comprises of the incorporation of the author and year of the resource that you are referring to. This is the essence of the Harvard system. There is no need to use footnotes or endnotes. You refer to the source as you use it in the text and then present a list of all of the sources used at the end in one continuous alphabetically ordered list. A reference should be used within the text whenever you use information quote directly, indirectly or paraphrase from another source.

Below you can see how references can be presented in the text. There are some variations depending on the number/type of authors and the year of publication. If you have read about *another* piece of work in your module textbook, you should use the 'Author cited in another work' style in the table below. If you quote words directly from another source, these should be enclosed within quotation marks and the author and date reference should also be followed by the number of the page from which the quote is taken (this is explained in the table below).

Author and year factors	Presentation within the text	Things to note
Short Quotations (less than 3 lines)	Powell (2001: 883) suggests that “descriptive accuracy may matter less than generating effective action” .	Notice that when you quote material directly, you <u>must</u> state the page number. You may use p. instead of : so that the reference reads (2001 p. 883) should you wish.
Long (block) quotations (three lines or more)	As Powell contends: Having said that, strategy scholars should acknowledge that the search for sustainable competitive advantages almost certainly arises from a false mental picture, namely the idea that a competitive advantage resides somewhere in time and space, findable in the same way that we find a misplaced fountain pen, or a sunken ship (Powell, 2001: 885).	For a large (three or more lines) quotation, the quoted material should be indented and does not need quotation marks.
One author	Powell (2002) suggests that in addition to the idea of a competitive advantage, organisations may also benefit from their ability to avoid the competitive disadvantages of others.  Or  It has been suggested that in addition to the idea of a competitive advantage, organisations may also benefit from their ability to avoid the competitive disadvantages of others (Powell, 2002)	You have a couple of choices here. If you wish to include the author’s name within the sentence, all that you need to include in brackets in the year of publication.  For stylistic purposes, you can also include both the author and year (separated by a comma in brackets)
2-3 authors	An early example of how the Delphi method is used in planning scenarios is observed in Delbecq, Van de Ven and Gustafson (1975).	
3+ authors	Yelkur et al. (2001) document the development of legislative changes dealing with product liability, including the case of <i>Grimshaw v Ford Motor Company</i> 119 Cal. App 3 d. 757 (1981).	The reference has four author names.  Use the first author surname followed by et al. (which means ‘and others’).

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Author cited in another work	The origins of Statistical Process Control can be traced back to the Bell Laboratories in the 1920s (Mann, 1985 cited in Reason, 1997:59).	This is an important form of citation, especially if you have used sources indirectly that are cited in a text book.
Several works by the same author(s)	The development of design school ideas grew through from the late 1960s to late 1980s (Ansoff, 1968; 1987; 1988)	Include <u>both</u> sources in the list of references.
Several works by the same author in the same year	Priem and Butler (2001a; 2001b) present and defend the proposition than ...	Date order separated by a semi-colon.
Work without a named person as author, e.g., Newspaper, Organisation	The Central Policy Review Staff (1975) reflected the British Government's pessimistic assessment of the economic prospects for the car industry.  Or  The pessimism surrounding the car industry at the time was reflected in the British Government's assessment of the economic prospects for the sector (Central Policy Review Staff, 1975)	Not the a and b which denote the order within the same year of publication. In the bibliography the a and b can be seen next to the year of publication. Active reference
Work does not have a publication date	Hawkins (n.d.) offers a useful insight into supply-chain developments from a practitioner perspective.	Passive reference
Personal communication	In a meeting with the company's CEO, the growth strategy was described as related diversification (Branson, 2004).	You may find that some web-site publications do not state the original date of publication. Don't assume that it is the same as the date that you accessed it. This is useful if you hold a meeting or telephone conversation as part of the research for your assignment.

Multiple references

The study of cognitive biases in decision making from the risk-oriented work of Tversky and Kahneman (1974) to the management oriented work of Schwenk (1984) and Schweiger and Finger (1984).

Or

The key works in the field of decision making under uncertainty has moved to an increasingly wide base from its original focus on risk (Tversky and Kahneman, 1974; Schweiger and Finger, 1984; Schwenk, 1984).

Notice that references are in date order

Website without author

The vision of the company is articulated in its 'Soul of Dell' (Dell, 2004)

Cite in the same way as work without a named person as author.

Website with known author

The Aberfan tragedy of October 1966 cost the lives of 144 people, including 116 children (Johnes and McLean, 2001)

Cite according to whether the material is written by 1, 2-3 or 3 or more authors (see above)

### Stage 3 - Compiling the references list

At the end of your essay/assignment or project you will need to present a list of references. In some cases, your tutor may require you to submit both a list of references *and* a bibliography. The difference between them is that a list of references includes all of the sources that you have referred to within the main body of text that you have written. A bibliography contains all of the sources that you have read in preparation for the work but may not have been used directly in the main text. In most cases, only a list of references is required. If you are doubt, ask for tutor for advice.

Compiling the list of references can be undertaken in two steps. First you should construct the individual reference for each source/resource used. The precise format depends on whether the source is a book, article, report, etc. This relies on having noted the details of the source as recommended in stage one of NICE. The second step involves the final construction of the list of references.

Publication/ resource type	Format of individual reference	Notes
Books	Barney, J. (1997) <i>Gaining and Sustaining Competitive Advantage</i> , Harlow, Addison-Wesley Publishing.	Book name should be in italics or underlined (use either but keep consistent). If the book is a second edition or later, this should be noted in the title
Chapter in a book	Bowman, C. (1992) 'Interpreting competitive strategy,' In Faulkner, D. and Johnson, G., <i>The Challenge of Strategic Management</i> , London, Kogan Page, pp. 64-83.	Page numbers for the chapter are required.
Journal articles	Benjamin, C. (1993) 'Honda and the Art of Competitive Manoeuvre', <i>Long Range Planning</i> , 26 (4), pp. 22-31.	Article title in inverted commas; Journal title in italics (or underline, but keep consistent). Note that pp. means "pages"
Journal articles from an electronic database (e.g. Business Source Premier etc)	Benjamin, C. (1993) 'Honda and the Art of Competitive Manoeuvre', <i>Long Range Planning</i> , 26 (4), pp. 22-31, Available from Science Direct. Accessed 16/6/2004.	Reference as you would a paper journal article but add "Available from" and the database name at the end of the reference. The date that you accessed the resource should also be stated.
Resource found on a website (htm, text or pdf)	DTI (n.d.) <i>The Business Manager's Guide to Information Security</i> , Department of Trade and Industry, London, Available from <a href="http://www.dti.gov.uk/industry_files/pdf/bus_man_guide.pdf">http://www.dti.gov.uk/industry_files/pdf/bus_man_guide.pdf</a> , Accessed 16/6/2004	
Reports	Bank of England (2000) <i>Quarterly Report on Small Business Statistics</i> , London, Domestic Finance Division, Bank of England.	
Conference paper	Bertodo, R.G. (1991) 'Co-Production: Basis of a New Supplier Relationship', <i>Society of Motor Manufacturers and Traders 5th Annual Quality Conference</i> , Birmingham, March 20.	Note that the date of the conference event is included.
Government publication	House Of Commons Select Committee (1987) <i>Third Report: The UK Components Industry</i> , London, HMSO.	
Newspaper article	Hamilton, K. (1997), 'Inside the City', <i>The Sunday Times</i> , November 23 <sup>rd</sup> , p. 16.	
Magazine article	Taylor, A. (1997) 'How Toyota defies Gravity', <i>Fortune</i> , 136 (11), December 8th pp. 38-44.	

FdSc FRCI Television programme/ film	BBC (2003) <i>Money Programme: McDonalds</i> (Television Broadcast on BBC2), 15 <sup>th</sup> July 2003, British Broadcasting Corporation.	
Computer software	SPSS Inc (1999) <i>SPSS Release 10.0.5</i> (Computer Programme) Available from SPSS Inc. Headquarters, 233 S. Wacker Drive, Illinois 60606	
Patent	Martin, R. (1997) ' <i>Recordable CDROM Accessing System</i> ', US Patent 5,666,531 Available from: <a href="http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&amp;Sect2=HITOFF&amp;p=1&amp;u=/nethtml/search-bool.html&amp;r=1&amp;f=G&amp;l=50&amp;co1=AND&amp;d=ptxt&amp;s1='optima+technology'&amp;OS=">http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&amp;Sect2=HITOFF&amp;p=1&amp;u=/nethtml/search-bool.html&amp;r=1&amp;f=G&amp;l=50&amp;co1=AND&amp;d=ptxt&amp;s1='optima+technology'&amp;OS=</a> , Accessed 16/6/2004	
Industry standard	ISO/IEC (2000) Information technology: Code of practice for information security management ISO/IEC 17799:2000, International Organization for Standardization, Geneva, Switzerland.	
Lecture notes	Smith, M (2004) <i>Lecture Notes: Week 6 CORP 3999 Logistics studies</i> , De Montfort University, Leicester	Use this if you use work presented or cited in a lecture.
Thesis	Mayedi, R. (1986) <i>Managerial Control in Large Japanese Firms: A New Perspective</i> , PhD Thesis, The American University, Washington D.C.	
Personal communication	Rendall, J. (2000) <i>Private communication</i> , 19 <sup>th</sup> September 2000.	
E-book	Gerber, M.E. (2003) <i>The E-Myth Manager</i> (E-book) PerfectBound, New York. Available at: <a href="http://us.perfectbound.com/">http://us.perfectbound.com/</a>	

This is not an exhaustive list, but it provides the main varieties of sources that you are likely to reference in your assignment. If there is something not listed here that you need to reference in your work, please ask your tutor.

### 3b Construct the references list

Take the individual references and reorder them into an alphabetical list (by surname). There is no need to separate items by type (book, newspaper, website). Below is an example of how your references list should appear on the page(s) following the text of your coursework.

#### References

Ansoff, H.I. (1968) *Corporate Strategy*, London, Penguin Books.

Ansoff, H.I. (1987) *Corporate Strategy*, Revised Edition, London, Penguin Business.

Ansoff, H.I. (1988) *Corporate Strategy*. New York: McGraw-Hill.

Branson, R. (2004) Private communication (by telephone), 16/6/2004.

Date printed: 06 March 2020

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CBI (2000) *Economic Bulletin*, September 2000, London, Confederation of British Industry

Central Policy Review Staff (1975) *The Future of the British Car Industry*, London, HMSO.

Delbecq, A.L., Van de Ven, A.H. and Gustafson, D.H. (1975) *Group Techniques for Program Planning: A Guide to Nominal Group and Delphi Processes*, Glenview Ill, Foresman.

Dell (2004) Soul of Dell, Dell Corporation Website. Available at

<http://www1.us.dell.com/content/topics/global.aspx/corp/soulofdell/en/index?c=us&l=en&s=corp> Accessed 16/6/2004.

Hawkins, S. (ND) *The Automotive Industry*, Touche Ross & Co, London.

Johnes, M. and McLean, I. (2001) *The Aberfan Disaster*, Nuffield College Oxford. Available from <http://www.nuff.ox.ac.uk/politics/aberfan/home2.htm> Accessed 16/6/2004.

Mann, N.R.(1985) *The Keys to Excellence: The Story of the Deming Philosophy*, London, Mercury.

Powell, T.C. (2002) The Philosophy of Strategy, *Strategic Management Journal*, 23, pp. 873-880.

Priem, R.L. and Butler, J.E. (2001a) 'Is the Resource-Based "View" a Useful Perspective for Strategic Management Research?', *Academy of Management Review*, 26 (1), pp. 22-40.

Priem, R.L. and Butler, J.E. (2001b) 'Tautology in the Resource-based View and the Implications of Externally Determined Resource Value: Further Comments', *Academy of Management Review*, 26 (1), pp. 57- 65.

Reason, J. (1997) *Managing the Risks of Organizational Accidents*, Ashgate, Aldershot

Schweiger, D. M. and Finger, P.A. (1984) 'The Comparative Effectiveness of Dialectical Inquiry and Devil's Advocacy,' *Strategic Management Journal*, 5, pp. 335-350.

Schwenk, C.R. (1984) 'Cognitive Simplification Processes in Strategic Decision Making', *Strategic Management Journal*, 5, pp. 111-128.

Tversky, A. and Kahneman, D. (1974), 'Judgement under Uncertainty: Heuristics and Biases', *Science*, 185, pp. 1124-1131.

Yelkur, R., Morrison, J., Steiner, E.H. and Schmehl, I. (2001) 'Product Liability: Its Impact of the Auto Industry, Consumers, and Global Competitiveness', *Business Horizons*, 44 (3) March/April, pp. 61-66

This will take very little time but it will ensure that do not have missing entries in the references list. Simply work your way through the text of your assignment and whenever you come across an author/date reference check to ensure that the full bibliographical citation can be found in the bibliography.

Additional features of referencing

As you quote directly from resources, there may be a reason for you to modify the quotation (although this should never affect its meaning). The modifications can take a number of forms:

- Use of italics in quotes
- Square brackets [ ]
- sic
- Ellipsis ...

These four conventions should be used sparingly.

**Italics** provide a way to emphasise key words within a quotation. You should always state that you have added italics. If the italics were already in the quotation, you should state 'original emphasis' instead.

Rice adds that "[attitudes] represent our basic orientation toward a given stimulus and as such form an important part of the way in which people *perceive* and react to their environment" (Rice, 1993:176 emphasis added).

Anything that is within **square brackets** is indicated as not part of the original quote. You may correct sexist, racist or homophobic language. You may also see **[sic]** within quotations. This is useful when you encounter a spelling or grammatical mistake in a quote. You must retain the mistake in the quote but you should insert [sic] after the mistake to signal that it is the original author's mistake and not yours.

Thus she adds that "*subsequent* to a firm's [sic] gaining a superior position and earning rents, there must be forces which limit competition for those rents" (Peteraf, 1993:182 original emphasis).

Should you need to quote only parts of a long section of text, you can use **ellipsis** (three dots) to signal that you have trimmed unnecessary material from your quote.

Asset specificity occurs when "the value of A ... increases in the presence of B, but the value of C is independent of either A or B ... [therefore] ... grows in value when it is teamed with B, but C does not" (Connor, 1991:135).

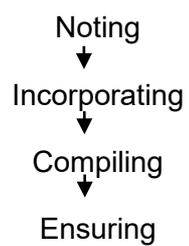
#### Checklist

Before you submit your coursework, work through the following checklist:

- Have I referenced all sources of ideas that are not my own?
- Have I listed all sources quoted directly or used indirectly in my work?
- Are websites referenced fully?
- Are references correct within the text?
- Are references for quotations correct?
- Are all quotations clearly contained within quotation marks (" ") or presented as an indented block quote?
- Have I referenced all sources for the examples that I have given (from newspapers, TV programmes, websites, etc)?
- Have I referenced lecture notes (if used)?
- Does my bibliography correspond with all sources cited in the text?
- Is my bibliography in alphabetical order?

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If you have any questions about referencing, please ask your tutor and remember that referencing is NICE!



## Appendix 2: Plagiarism, collusion and bad academic practice

First offence: fail module	The University uses three terms – <b>plagiarism, collusion and bad academic practice</b> – to distinguish between malicious cheating and incompetent referencing. All three involve <b>assessed work being submitted by a student who in some way gains advantage by passing off the work of someone else as though it were their own</b> . In the most severe cases, or for second offences, those found guilty of plagiarism can be expelled from the University. Less severe first offences of plagiarism or collusion are likely to result in failing the module.
Second offence: expulsion	Bad academic practice will usually result in the piece of work having to be re-submitted for a maximum mark of 40% – a bare pass.

### Plagiarism

**Plagiarism** is commonly *the word for word substantial duplication of phrases or sentences where the source is **deliberately** not mentioned*. Plagiarism is possible in all forms of presentation including written work, oral presentation, software development and the production of media artefacts. Sources which are not acknowledged include the work of other students at this University (who would be themselves be guilty of *collusion* if they deliberately supplied work to be copied), the work of students at other institutions and material produced through online 'cheat' sites, as well as the more obvious copying from books, journals and the Internet.

### Collusion

**Collusion** involves **two or more students at this University who conspire to deceive**, one student deliberately supplying material to be copied, the other doing the copying, where the source is deliberately not mentioned in the submitted work. As with plagiarism, collusion is possible in all forms of presentation including written work, oral presentation, software development and the production of media artefacts. Collusion should not be confused with the good practice of collaborative learning and peer support where assessment is not involved. However, unless you are explicitly instructed to plan, organise and write an assignment in a group of two or more, you must do all aspects of assessed work individually.

### Bad academic practice

Bad academic practice is the passing off of material that is not within the realm of common knowledge in the discipline as if such material was your own, or it is the word for word duplication of short phrases where the source is not mentioned, and where such duplication is minor in scale. Typically, this boils down to poor citation of reference material.

Guidance on referencing from within essays/reports can be found at the URL below. In non-written assessments the equivalent information should be provided. In oral presentations, this would typically require a hand-out with full bibliographic details to which spoken references are made during the presentation. In software construction, two types of comment should be used; one giving full information of all sources at the end of the code, the other placed at the point in the code where the source material was used, briefly referencing the full source comment.

### Appendix 3: Referencing the work of others

Unless otherwise instructed, use the Harvard referencing system for citing the published original work from which you have derived your ideas. Use the example below to guide your citation of book or web source material. An online guide is available at:

<http://www.library.dmu.ac.uk/Images/Selfstudy/Harvard.pdf>

Body of report, essay etc	Body of source code
<p>Kernighan and Ritchie (1988, p.3) describe C as “independent of any particular machine architecture”. Others (SUN 2004) claim that “Java technology has grown in popularity and usage because of its true portability”.</p>	<pre>/* based on Kernigan and Ritchie 1988 p106 */ void stringcopy(char *from,                 char *to) {     while(*to++ = *from++) </pre>
<p><b>Bibliography (placed in a final comment if this is sourcecode)</b>  <b>(listed in surname alphabetical order of author)</b></p> <p>KERNIGHAN, B.W. and RITHCHIE, D.M. (1988) <i>The C Programming Language</i>, 2ed, New Jersey, Prentice Hall                  SUN (2004), <i>Java 2 Platform</i>, [WWW] Sun Microsystems Inc.                  Available from: <a href="http://java.sun.com/java2/whatis/">http://java.sun.com/java2/whatis/</a> [Accessed 1/9/04)</p>	

#### **Appendix 4: Standard Entry Requirements**

Two A levels, one of which is in a quantitative subject and five GCSEs at Grade C.

Applications from mature students with a relevant background and interest is strongly encouraged. For such applicants a key factor will be their understanding of mathematics and physics. If necessary, an assessment will be made to clarify whether a student's background in the area of Mathematics and Physics is suitable for the Programme.

Students wishing to enter the FdSc at a higher level will need to satisfy the following entry requirements:

DMU's UCPD in Forensic Road Collision Investigation

Or

The City & Guilds in Forensic Road Collision Investigation for police personnel. If entering by this route students will also need to take Statistics for Collision Investigators.

**De Montfort University****Module template proforma****Basic module information**

Module Title: Collision Case Studies

Module Code: ENGS1002 Credit value: 15

Credit level: 1

Owning Board: ENGS

Faculty: CSE – Faculty of Technology

Term/semester: Semester Y; Semester SY (Spanning from Prev Year)

Module Leader: Haris Pancholi

Module pre-requisites (module code/s only):

Maximum student numbers on module (if applicable):

**Module description** (including outline content)

This module is intended for students studying the University Certificate in Continuing Professional Development in Forensic Collision Accident Investigation.

The module gives students the skills assess and evaluate available data, perform the necessary calculations and prepare a written report

Carry out procedures for accurate and concise recording of data.

Be able to use relevant research materials and technical reports

Format and structure reports

Be able to discern the difference between opinion and fact in legal proceedings

Carry out case studies (2) of real collisions

Understand and apply Health and Safety requirements and personal safety at accident scenes

Attend a residential week long course to practice and strengthen these skills

**Learning outcomes**

1 Be able to assess and evaluate available road collision investigation data

2 Be able to prepare a written report on a case study road collision, appreciating the legal implications

**Assessment**

Type of assessment	Duration/volume	Assessment weighting %	Final assessment Y/N	Minimum threshold mark % (if not 40%)	Essential component Y/N	Learning outcome(s) assessed	Anonymously marked Y/N
Other Coursework		90%			Y	1, 2	Y
Other Coursework		10%			Y	1, 2	Y

**Assessment Notes**

Assessment is by Coursework. Feedback is by the assessments, together with telephone and e-mail contact with a tutor. Verbal interaction between student and tutor can be initiated to support the students presentation of work where necessary.

Assessment is by two full file case studie reconstructions from collision investigation that equate to 90% of the module assessment weighting. The second element is based on practical work from the residential component that leads to a scale plan being produced to accompany the case studies to fulfill the final 10% of the assessment weighting.

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**Reassessment**

Re-assessment/deferral is by failed component. There will be a maximum of 2 resit opportunities, with the recorded mark being capped at the module pass mark.

**Expected methods of delivery**

This module is delivered by distance learning and attendance at a residential course.

**Module delivery variations** (if applicable)

**De Montfort University**

**Module template proforma**

**Basic module information**

Module Title: Collision Fundamentals

Module Code: ENGS1003 Credit value: 45

Credit level: 1

Owning Board: ENGS

Faculty: CSE – Faculty of Technology

Term/semester: Semester Y; Semester SY (Spanning from Prev Year)

Module Leader: Haris Pancholi

Module pre-requisites (module code/s only):

Maximum student numbers on module (if applicable):

**Module description** (including outline content)

This module is intended for students studying the University Certificate in Continuing Professional Development in Forensic Collision Accident Investigation.

The modules gives the students to skills to use the necessary mathematics and mechanics, analyse the behaviour of skidding vehicles, perform momentum and critical speed analysis, perform projectiles and limited visibility calculations and record and analyse the accident scenario.

This module is delivered by distance learning and attendance at a residential course.

There is a learning plan for working through the teaching material.

**USE MATHEMATICS AND MECHANICS IN ACCIDENT INVESTIGATION**

Perform standard mathematical calculations used in road accident investigation

Perform algebraic manipulation on formulae used in road accident investigation, represent such formulae graphically, plot graphs and obtain information from graphs

Use vector and scalar quantities with appropriate units,

Element 1.4 Use the equations of constant acceleration, of conservation of momentum and of energy transfer and be aware of the limitations and restrictions on the use of such formulae.

Perform calculations for friction and rotational motion

**ANALYSE THE BEHAVIOUR OF VEHICLES UNDER EMERGENCY BRAKING**

Determine coefficients of friction and predict motion of vehicles

Allow for changes in road surface, gradients and rotation in emergency braking calculations.

Allow for unbraked trailers in calculations

Allow for partial or incomplete braking in calculations

**PERFORM MOMENTUM, CRITICAL SPEED, PROJECTILES AND LIMITED VISIBILITY CALCULATIONS**

Determine vehicle speeds by applying the principle of the conservation of momentum.

Determine vehicle speeds from an analysis of circular motion.

Estimate vehicle speeds from analysis of projectiles, including pedestrians as projectiles.

Estimate maximum safe driving speeds from an analysis of visibility ranges.

**RECORD AND ANALYSE THE ACCIDENT SCENARIO**

Critically evaluate tyre marks and perform skid tests

Prepare a plan of the scene of an accident.

Analyse the interaction of the driver and their environment

**APPLY STATISTICAL ANALYSIS TO ACCIDENT SCENARIO**

Collect suitable data from practical testing

Analyse data for consistency

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Determine mean, median, mode and standard deviation

Determine confidence levels applicable to data

Incorporate results into reconstructions

### Learning outcomes

- 1 Be able to use mathematics and mechanics in road collision investigation
- 2 Be able to analyse the behaviour of vehicles under emergency braking
- 3 Be able to perform momentum, critical speed, projectiles and limited visible visibility calculations
- 4 Be able to record and analyse the road collision scenario
- 5 Be able to apply statistical analyses to the road collision scenario

### Assessment

Type of assessment	Duration/volume	Assessment weighting %	Final assessment Y/N	Minimum threshold mark % (if not 40%)	Essential component Y/N	Learning outcome(s) assessed	Anonymously marked Y/N
Unseen Examination	180	50%	Y		Y	1, 2, 3, 4, 5	Y
Other Coursework		50%			Y	1, 2, 3, 4, 5	Y

### Assessment Notes

There are two components to the assessment of this module - unseen examination and other coursework. Because of Association of Chief Police Officers and Institute of Traffic Investigators requirements it is necessary to obtain a pass in both components to pass the module. Both the examination and the coursework assess a wide range of relevant skills.

The coursework element of the assessments is constructed of four tutor marked formative assessments throughout the course each of which are weighted at 10%. The final 10% of the coursework relates to the practical assessment day which is conducted at a testing ground to establish competency in the analysis of vehicle behaviour in a practical environment.

### Reassessment

Re-assessment/deferral is by failed component. There will be a maximum of 2 resit opportunities, with the recorded mark being capped at the module pass mark.

### Expected methods of delivery

This module is delivered by distance learning and attendance at a residential course.

### Module delivery variations (if applicable)

## Module template proforma

**Basic module information**

Module Title: Statistics in Collision Investigation

Module Code: ENGS1005 Credit value: 15 Credit level: 1

Owning Board: ENGS

Faculty: CSE – Faculty of Technology

Term/semester: Semester Y; Semester SY (Spanning from Prev Year)

Module Leader: Haris Pancholi

Module pre-requisites (module code/s only):

Maximum student numbers on module (if applicable):

**Module description** (including outline content)

This module is designed for those students who have not previously studied ENGS1003. It provides students with an understanding of the theory and practice behind statistical analyses and introduces students to the concept of measurement and calculation to a specific level of confidence. Students are encouraged to gather their own data from a series of experiments and analyse that data. Students will typically use spreadsheet programs to assist with data analysis such as Excel or Numbers

The outline content is as follows:

Data collection techniques

Consistency analysis

Data classification

Graphical representation of data

Mean, median and mode

Standard deviation and standard error

Shape of distributions

Samples and populations

Confidence intervals

Linear regression

Propagation of error

Incorporate results into reconstructions

Learners will participate in briefing sessions, group sessions, practical exercises and tutorials. Learners will also engage in practical and reflective learning outside the formal teaching environment where they will develop their investigative skills and apply these skills to a variety of practical scenarios.

**Learning outcomes**

- 1 Evaluate the theory and practical application of statistical techniques.
- 2 Apply statistical analyses to road collision scenarios.

**Assessment**

Type of assessment	Duration/volume	Assessment weighting %	Final assessment Y/N	Minimum threshold mark % (if not 40%)	Essential component Y/N	Learning outcome(s) assessed	Anonymously marked Y/N
Other Coursework		100%	Y		Y	1, 2	Y

**Assessment Notes**

The assessment will consist of coursework which includes written answers to a series of questions and problems. It will also include the collection and collation of data from a practical exercise

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together with subsequent analysis of the results. This is worth 100%

**Reassessment**

Re-assessment/deferral is by failed component. There will be a maximum of 2 resit opportunities, with the recorded mark being capped at the module pass mark.

**Expected methods of delivery**

This module can be delivered and assessed entirely as a distance learning module. Additional care and attention to health and safety issues will be required if data collection is performed by unsupervised learners.

**Module delivery variations** (if applicable)

**De Montfort University****Module template proforma****Basic module information**

Module Title: Accelerometers in Crash Investigation

Module Code: ENGS1012 Credit value: 15 Credit level: 1

Owning Board: ENGS

Faculty: CSE – Faculty of Technology

Term/semester: Semester Y; Semester SY (Spanning from Prev Year)

Module Leader: Haris Pancholi

Module pre-requisites (module code/s only):

Maximum student numbers on module (if applicable):

**Module description** (including outline content)

This module provides students with the theoretical and practical knowledge to operate a variety of accelerometer devices to obtain friction coefficients. The module builds on these foundations to provide students with an understanding of the theory and practice of using accelerometers to analyse other performance factors from accelerometers such as acceleration rates and engine/achieved power output. Techniques and limitations on interfacing with external sensors and the vehicle itself are also explored. Typically Vericom / Skidman / AX22 will be used for this module together with the relevant software programs. Emphasis is placed on practical data acquisition and subsequent analysis.

Learners will have the opportunity to experience a range of teaching and learning styles through this module. They will participate in briefing sessions, tutorials and practical sessions where their theoretical predictions will be compared with real-world data. Learners will also engage in reflective and practical learning outside the formal teaching sessions. Typically Skidman, Vericom and AX22 devices will be used to generate accelerometer data to test learner's hypotheses.

The outline content is as follows:

Accelerometer theory

Data types

Device operation and data acquisition techniques

Obtaining coefficients from accelerometer data

Device positioning

External sensors

Vehicle interface

Further data acquisition

Use of suitable software for data analysis and presentation, eg SkidCalc, Profile

Crash-phase analysis

Determination of DeltaV

Incorporating the effects of rotation

Accuracy and limitations

**Learning outcomes**

- 1 Apply a knowledge of the theory and practical constraints to obtain friction coefficients from accelerometers.
- 2 Interpret accelerometer data to accurately determine friction coefficients.
- 3 Compare theoretical understanding with practical limitations in techniques used to obtain vehicle performance data from accelerometers.
- 4 Implement appropriate methods using accelerometers to accurately determine vehicle performance data.

**Assessment**

Type	of	Duration/	Assessment	Final	Minimum	Essential	Learning	Anonymously
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assessment	volume	weighting %	assessment Y/N	threshold mark % (if not 40%)	component Y/N	outcome(s) assessed	marked Y/N
Other Coursework	1500 words	40%			N	1, 2, 3, 4	Y
Case Study	1500	60%			N	1, 2, 3, 4	Y

### Assessment Notes

The assessment will consist of a report and a case study report.

The report will consist of a written description of about 1500 words concerning the behaviour of a vehicle from the results of a practical test and is worth 40%. The second assessment will be a case study based around the use of accelerometer data.

### Reassessment

Re-assessment/deferral is by failed component. There will be a maximum of 2 resit opportunities, with the recorded mark being capped at the module pass mark.

### Expected methods of delivery

This module can be delivered through blended learning.

### Module delivery variations (if applicable)



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 Judging distances  
 Gleaning timings from video footage  
 Calculating speed from CCTV footage  
 Maintaining data integrity

### Learning outcomes

- 1 Use appropriate techniques to differentiate polynomial and exponential equations
- 2 Apply the scalar (dot) product and vector (cross) product to investigate problems involving lines
- 3 Apply underpinning theory and existing practice to the measurement of damaged vehicles.
- 4 Calculate the velocity change to each vehicle as a result of an impact from damage measurements.
- 5 Evaluate video footage for accuracy and to obtain event information
- 6 Use appropriate techniques to obtain distance data from video images
- 7 Calculate speed from video footage

### Assessment

Type of assessment	Duration/volume	Assessment weighting %	Final assessment Y/N	Minimum threshold mark % (if not 40%)	Essential component Y/N	Learning outcome(s) assessed	Anonymously marked Y/N
Other Coursework 1		50%			N	1, 2	Y
Phase Test	60 minutes	15%			N	3, 4	Y
Case Study		15%			N	3, 4	Y
Other Coursework 2		20%			N	5, 6, 7	Y

### Assessment Notes

The assessment will consist of a coursework to assess the applied mathematics components. A phase test and case study will be used to assess the crush damage component and coursework is used to assess the forensic mapping component.

Coursework 1 will consist of a series of mathematical problems and is worth 50% of the overall module.

Phase test 2 will be a phase test based on vehicle crush analysis lasting one hour and is worth 15%.

The case study report will be practical reconstruction report containing crush analysis to include scene plan, completed measurement forms, photographs of the damaged vehicles, copy of the software file and a written report of about 1000 words. This is worth 15%

Coursework 2 will consist of a series of digital CCTV files requiring analysis using appropriate techniques and reporting on. This is worth 20%

### Reassessment

Re-assessment/deferral is by failed component. There will be a maximum of 2 resit opportunities, with the recorded mark being capped at the module pass mark.

### Expected methods of delivery

This module can be delivered through blended learning.

### Module delivery variations (if applicable)

**Module template proforma**

**Basic module information**

Module Title: Driver and Environment

Module Code: ENGS1016 Credit value: 15

Credit level: 1

Owning Board: ENGS

Faculty: CSE – Faculty of Technology

Term/semester: Semester Y; Semester SY (Spanning from Prev Year)

Module Leader: Haris Pancholi

Module pre-requisites (module code/s only):

Maximum student numbers on module (if applicable):

**Module description** (including outline content)

This module provides students with a theoretical and practical understanding of driver response time and the effect of moisture and contaminants on road surfaces. The module covers the important components of driver response time and also the method of calculation of driver response time. The module also provides students with an understanding of how friction on wet and lubricated road surfaces varies when compared to dry roads. The module examines a variety of models and data to determine likely friction coefficients in practical scenarios.

Learners will have the opportunity to experience a range of teaching and learning styles through this module. They will participate in briefing sessions, tutorials and simple experiments. In addition they will use MathCAD, or other suitable software, to perform and document their response time calculations. There will be a briefing session at the start of the module. Students will also use Excel or other suitable software to model and subsequently analyse the behaviour of vehicles sliding on wet or contaminated roads. Learners will then engage in reflective, experimental and practical learning.

The outline content is as follows:

Statistical nature of driver response time

Detection: gorillas in a tutu, etc, Looked but Failed to See Accidents

Identification: optical illusions, etc

Night Time Factors

Decision: complexity of response

Response: human and mechanical

Muttart's key factors

Muttart's calculations

Accuracy of calculations

Models for dry road friction

Models for wet / damp road friction

Speed dependence

Tyre dependence

Large vehicles

Spin down velocities and application to road vehicles

Effect of contaminants

**Learning outcomes**

- 1 Critically analyse the theory and application of driver response time studies in practical scenarios
- 2 Use an appropriate method to calculate the driver response time in a variety of situations.
- 3 Contrast theoretical knowledge with practical problems associated with determining friction coefficients on wet and contaminated roads.
- 4 Compare various mathematical models to calculate likely friction coefficients on wet and contaminated roads.

**Assessment**

Type of assessment	Duration/volume	Assessment weighting %	Final assessment Y/N	Minimum threshold mark % (if not 40%)	Essential component Y/N	Learning outcome(s) assessed	Anonymously marked Y/N
Other Coursework		30%	N		N	1, 2	Y
Other Coursework		30%	N		N	3, 4	Y
Other Coursework		40%	Y		N	1, 2, 3, 4	Y

**Assessment Notes**

The assessment will consist of three essay question based assessments. There are three separate essay submissions to allow feedback to be provided before the next essay in order for the students to develop their essay writing techniques as well as their knowledge through the module.

**Reassessment**

Re-assessment/deferral is by failed component. There will be a maximum of 2 resit opportunities, with the recorded mark being capped at the module pass mark.

**Expected methods of delivery**

This module can be delivered through distance learning.

**Module delivery variations (if applicable)**

**De Montfort University**

**Module template proforma**

**Basic module information**

Module Title: Further Maths For Collision Investigators  
Module Code: ENGS2001    Credit value: 30                      Credit level: 2  
Owning Board: ENGS  
Faculty: CSE – Faculty of Technology  
Term/semester: Semester Y; Semester SY (Spanning from Prev Year)  
Module Leader: Haris Pancholi  
Module pre-requisites (module code/s only):  
Maximum student numbers on module (if applicable):

**Module description** (including outline content)

This module extends and develops students' mathematical ability. Additional mathematical techniques are introduced which are necessary to analyse collision investigation problems beyond those covered during introductory courses. It also provides a sound theoretical basis for the modelling modules and project work. The module is based around a set book, Engineering Mathematics by Croft, Hargreaves and Davidson and concentrates on the topics that are relevant to collision investigation. Individual topics are introduced in logical and easily understood units with emphasis on applying mathematical techniques to solve practical problems. A symbolic manipulation package such as Mathcad will be used to support the development of the material.

Learners will have the opportunity to experience a range of teaching and learning styles through this module. The majority of the module will be delivered via distance learning in a similar manner to the existing UCPD in FRCI. There will also be elements requiring attendance at AiTS where learners will participate in briefing sessions, lectures, tutorials and practical work. Learners will also engage in reflective and practical learning throughout the module.

The outline content is as follows:

Polynomial equations  
Partial fractions  
Further trigonometry  
Differentiation  
Integration  
Ordinary differential equations  
Complex numbers  
Series and limits  
Error propagation  
Multiple integrals  
Vector algebra  
Partial differentiation  
Matrices  
Normal modes  
Functions of more than one variable  
Probability

**Learning outcomes**

- 1 Manipulate functions in 1, 2 or 3 variables, applying the appropriate techniques to the solutions of problems.
- 2 Solve first- and second-order ordinary differential equations and apply them to simple problems in mechanics.
- 3 Use vector algebra to analyse problems involving lines and planes, apply the scalar (dot) product and vector (cross) product to vectors.

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4 Perform basic arithmetic operations on matrices, find the determinant of square matrices of order 3, invert a matrix and apply it to the solution of linear algebraic equations, find eigenvalues and eigenvectors of a matrix

### Assessment

Type of assessment	Duration/volume	Assessment weighting %	Final assessment Y/N	Minimum threshold mark % (if not 40%)	Essential component Y/N	Learning outcome(s) assessed	Anonymously marked Y/N
Other Coursework		50%	N		N	1, 2	Y
Other Coursework		50%	Y		N	3, 4	Y

### Assessment Notes

The assessment will consist of two mathematically based coursework assignments to assess the learning outcomes at various points to allow feedback throughout the module.

### Reassessment

Re-assessment/deferral is by failed component. There will be a maximum of 2 resit opportunities, with the recorded mark being capped at the module pass mark.

### Expected methods of delivery

This module can be delivered through distance learning.

### Module delivery variations (if applicable)

## De Montfort University

### Module template proforma

#### Basic module information

Module Title: Computers and Collision Analysis  
 Module Code: ENGS2002 Credit value: 15 Credit level: 2  
 Owing Board: ENGS  
 Faculty: CSE – Faculty of Technology  
 Term/semester: Semester Y; Semester SY (Spanning from Prev Year)  
 Module Leader: Haris Pancholi  
 Module pre-requisites (module code/s only):  
 Maximum student numbers on module (if applicable):

#### Module description (including outline content)

This module broadens and deepens the students mathematical vocabulary. It is based around a modern software package. The students learn to do numerical and symbolic computations. These computations form the basis for a further mathematical and statistical concepts. Typically Mathcad will be used in this module.

The outline content is as follows:

Standard software, such as Mathcad, for calculations  
 Computations in Mathcad: constants, variables, matrices  
 Functions and graphs  
 Symbolic calculations in Mathcad: simple algebraic manipulation  
 Algebraic solution of equations  
 Small errors formula  
 Best fit curves  
 Linear regression and correlation  
 Polynomial regression

#### Learning outcomes

- 1 Construct numerical and symbolic computations using standard software.
- 2 Use matrices as tables to obtain a range of results for various different input parameters.
- 3 Compute regression calculations using standard software.
- 4 Interpret results of computations in the context of a collision.

#### Assessment

Type of assessment	Duration/volume	Assessment weighting %	Final assessment Y/N	Minimum threshold mark % (if not 40%)	Essential component Y/N	Learning outcome(s) assessed	Anonymously marked Y/N
Other Coursework		100%	N		N	1, 2, 3, 4	Y

#### Assessment Notes

The assessment will consist of a maths based assignment to be answered and presented using software packages. This will include a case study as part of the assignment that will require the students to draw on their previous experience of reconstruction to present a short report using what they have learnt during the module.

The case study report will be the analysis of a collision containing a discussion of the data, an outline of the method, details of the calculations and an interpretation/opinion of the results.

#### Reassessment

Re-assessment/deferral is by failed component. There will be a maximum of 2 resit opportunities, with the recorded mark being capped at the module pass mark.

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**Expected methods of delivery**

This module can be delivered through distance learning.

**Module delivery variations** (if applicable)

## De Montfort University

### Module template proforma

#### Basic module information

Module Title: Pedestrian and Pedal Cycle Collisions  
 Module Code: ENGS2003    Credit value: 15                      Credit level: 2  
 Owing Board: ENGS  
 Faculty: CSE – Faculty of Technology  
 Term/semester: Semester Y; Semester SY (Spanning from Prev Year)  
 Module Leader: Haris Pancholi  
 Module pre-requisites (module code/s only):  
 Maximum student numbers on module (if applicable):

#### Module description (including outline content)

This module provides students with a theoretical and practical understanding of the modelling of pedestrian and pedal cycle collisions. The module covers the various mathematical models commonly used to determine vehicle speed from the distance a pedestrian or pedal cyclist is projected in a collision. The module also covers the collection of scene data.

Learners will have the opportunity to experience a range of teaching and learning styles through this module. They will participate in, tutorials and practical experiments involving crashes between vehicles and full size dummies. They will perform calculations to find pedestrian speeds and vehicle speeds. Learners will then engage in reflective, experimental and practical learning.

The outline content is as follows:

The standard data sets against which the models are validated  
 Statistical versus semi empirical models  
 Specific models by Appel, Hill, Detinger, Fuger, Searle, Evans and Smith, Wood, North Western University, Field, Eubanks.  
 Pedestrian coefficients of friction and correction factors  
 Pedestrian walking and running speeds  
 Pedal cycle theory, gear ratios, lean angles  
 Pedal cycles dynamics in collisions  
 Data collection methodology  
 Presentation of results

#### Learning outcomes

- 1 Critically discuss the standard data sets of pedestrian collisions and their limitations.
- 2 Select appropriate values for pedestrian parameters such as walking speed.
- 3 Apply a knowledge of the underpinning theory to practical pedestrian and pedal cycle collisions
- 4 Evaluate a collision scene and utilise appropriate equations to estimate the speed of a vehicle involved in a pedestrian collision.
- 5 Evaluate a collision scene and utilise appropriate equations to estimate the speed of a pedal cycle involved in a collision.

#### Assessment

Type of assessment	Duration/volume	Assessment weighting %	Final assessment Y/N	Minimum threshold mark % (if not 40%)	Essential component Y/N	Learning outcome(s) assessed	Anonymously marked Y/N
Phase Test		25%	N		N	1, 2, 3	Y
Other Coursework		75%	Y		N	1, 2, 3, 4, 5	Y

#### Assessment Notes

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The assessment will consist of a phase test, a report on standard methods and calculations and a case study.

The phase test will last one hour and is worth 25%.

The report and case study will summarise the practical work completed as part of the module and will report of the data collection methods, details of the calculations performed and an interpretation/opinion of the results. This is worth 75%.

### **Reassessment**

Re-assessment/deferral is by failed component. There will be a maximum of 2 resit opportunities, with the recorded mark being capped at the module pass mark.

### **Expected methods of delivery**

This module can be delivered through blended learning.

### **Module delivery variations** (if applicable)



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The coursework will consist of a phase test and case study.

The phase test will be a multiple choice test lasting 1.5 hours and is worth 40%.

The case study report will be practical reconstruction report containing crush analysis to include scene plan, completed measurement forms, photographs of the damaged vehicles, copy of the software file and a written report of about 1000 words. This is worth 60%

**Reassessment**

Re-assessment/deferral is by failed component. There will be a maximum of 2 resit opportunities, with the recorded mark being capped at the module pass mark.

**Expected methods of delivery**

This module can be delivered through blended learning.

**Module delivery variations** (if applicable)

## De Montfort University

### Module template proforma

#### Basic module information

Module Title: Motorcycle Collision and Dynamics  
 Module Code: ENGS2007 Credit value: 15 Credit level: 2  
 Owing Board: ENGS  
 Faculty: CSE – Faculty of Technology  
 Term/semester: Semester Y; Semester SY (Spanning from Prev Year)  
 Module Leader: Haris Pancholi  
 Module pre-requisites (module code/s only):  
 Maximum student numbers on module (if applicable):

#### Module description (including outline content)

This module provides students with a theoretical and practical understanding of motorcycle handling. The module covers the important components of single track vehicles, rectilinear motion and steady state turning. It also looks at steering theory and how the gyroscopic forces generate righting moments affecting the stability of these vehicles.

Learners will have the opportunity to experience a range of teaching and learning styles through this module. They will participate in tutorials, briefing sessions, practical work and group activities. The practical work will typically include experiments and demonstrations to show the practical result of steering forces and gyroscopic effects (using pedal cycles). There will be a briefing session at the start of the module and the initial sessions will be delivered intensively over a few days. This will typically be followed by a period of reflective and practical learning outside the formal sessions.

The outline content is as follows:

Braking motor cycles  
 Sliding motor cycles  
 Use of Searle and Searle's results for rider throw  
 Use of the compression of the wheel base caused by a collision  
 Design and layout of motorcycles for safety and handling  
 Design criteria  
 Rectilinear motion of motorcycles  
 Steering theory (practical - pedal cycle in a curved path)  
 The effect of the rider servo mechanism  
 Motorcycle manoeuvrability and handling  
 Positional fixation and cornering  
 Braking and cornering forces, maximum banking angle and how this can be increased.

#### Learning outcomes

- 1 Select an appropriate deceleration rate for a braking or sliding motor cycle.
- 2 Use damage to a motor cycle to estimate the speed change.
- 3 Demonstrate a knowledge of the theory of design and characteristics of motorcycles
- 4 Demonstrate steering theory and its application
- 5 Apply appropriate techniques to determine speed of motorcycles involved in a collision

#### Assessment

Type of assessment	Duration/volume	Assessment weighting %	Final assessment Y/N	Minimum threshold mark % (if not 40%)	Essential component Y/N	Learning outcome(s) assessed	Anonymously marked Y/N

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<b>Phase Test</b>		<b>40%</b>	<b>N</b>		<b>N</b>	<b>1, 2, 3</b>	<b>Y</b>
<b>Case Study</b>		<b>60%</b>	<b>N</b>		<b>N</b>	<b>1, 2, 3, 4, 5</b>	<b>Y</b>

### **Assessment Notes**

The coursework will consist of a phase test and a case study.

The phase test will be a multiple choice test lasting one hour and is worth 40%.

The case study report is worth 40%.

### **Reassessment**

Re-assessment/deferral is by failed component. There will be a maximum of 2 resit opportunities, with the recorded mark being capped at the module pass mark.

### **Expected methods of delivery**

This module can be delivered through blended learning.

### **Module delivery variations (if applicable)**

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### Module template proforma

#### Basic module information

Module Title: Analysis of Digital Data

Module Code: ENGS2015 Credit value: 15

Credit level: 2

Owning Board: ENGS

Faculty: CSE – Faculty of Technology

Term/semester: Semester Y; Semester SY (Spanning from Prev Year)

Module Leader: Haris Pancholi

Module pre-requisites (module code/s only):

Maximum student numbers on module (if applicable):

#### Module description (including outline content)

This module provides students with the theoretical and practical understanding to analyse and utilise the data from incident data recorders (IDR) and digital tachographs in collision reconstruction and forensic route tracing scenarios. Considerable emphasis is placed on the analysis of data from real-world scenarios using suitable software. A variety of software packages are typically used for this module such as Digital Analyst, Lisle, TISCompact and DTCOScope.

Learners will have the opportunity to experience a range of teaching and learning styles through this module. They will participate in briefing sessions, tutorials and practical sessions. In practical sessions they will use software both to download data from IDRs etc and to analyse data downloaded from digital sources. In addition they will use suitable devices to download data from digital tachographs and analyse data using specialist software packages. Learners will also engage in reflective and practical learning outside the formal teaching sessions.

The outline content is as follows:

Technical description of Incident Data Recorder (IDR)

Technical description of Event Data Recorders (EDR)

Technical description of Digital Tachographs

Data downloading

Data evaluation and presentation using suitable software

Accuracy and tolerances

#### Learning outcomes

- 1 Critically appraise Incident Data Recorder functions and data.
- 2 Evaluate downloaded data using suitable software.
- 3 Analyse and interpret data derived from IDRs
- 4 Compare the various functions of Digital Tachographs and data relevant to collision investigation and route-tracing.
- 5 Analyse and utilise downloaded data using suitable software.

#### Assessment

Type of assessment	Duration/volume	Assessment weighting %	Final assessment Y/N	Minimum threshold mark % (if not 40%)	Essential component Y/N	Learning outcome(s) assessed	Anonymously marked Y/N
Other Coursework		50%	N		N	1, 2, 3, 4, 5	Y
Other Coursework		50%	N		N	1, 2, 3, 4, 5	Y

#### Assessment Notes

Case study 1 will be practical reconstruction report based on IDR data. This report will contain an

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interpretation of the results. A copy of the software file generated will be assessed together with a written report of about 1000 words. This component is worth 50%.

Case study 2 will also be a practical reconstruction report but will be based on digital tachograph data. This report will contain an interpretation of the results. A copy of the software file generated will be assessed together with a written report of about 1000 words. This component is worth 50%

**Reassessment**

Re-assessment/deferral is by failed component. There will be a maximum of 2 resit opportunities, with the recorded mark being capped at the module pass mark.

**Expected methods of delivery**

This module can be delivered through distance learning.

**Module delivery variations** (if applicable)



**Assessment**

Type of assessment	Duration/volume	Assessment weighting %	Final assessment Y/N	Minimum threshold mark % (if not 40%)	Essential component Y/N	Learning outcome(s) assessed	Anonymously marked Y/N
Other Coursework		50%	N		N	1, 2, 3	Y
Other Coursework		50%	N		N	1, 4, 5	Y

**Assessment Notes**

Assessment 1 will relate to tyre technology with information and mathematical calculations provided.

Assessment 2 will revolve around the simulation of vehicle dynamics using specialist software.

**Reassessment**

Re-assessment/deferral is by failed component. There will be a maximum of 2 resit opportunities, with the recorded mark being capped at the module pass mark.

**Expected methods of delivery**

This module can be delivered through distance learning.

**Module delivery variations (if applicable)**